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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LIN, ING HOUR

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,750

Applicant(s)

LEWIS ET AL.

Examiner

Ing-Hour Lin

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/05 & 1/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

In view of prior art cited in this office action, the final rejection mailed 7/28/05 was withdrawn.

Claim Objections

1. Claim 30 is objected to because of the following informalities: In claim 30, "coating" should be changed to --casting--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 10-11, 35-36 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 09182952.

JP '952 (see abstract and Figs. 1-11) teaches the claimed casting removing method, comprising: cooling molten metal charged into a mold cavity of a mold 2 including a core 4 for shaping a casting 1; moving the loaded mold to a high pressure water station 8 and removing the mold and core after casting the cast article, directing the mold and core an energized stream such as a jetted high pressure water through the use of nozzle 9 and dislodging at least a portion of the degraded mold and core from the casting.

Art Unit: 1725

4. Claims 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Vinton et al.

Vinton et al (col. 3, lines 27+ and EXAMPLES 2 and 6) teach the claimed casting removing method, comprising: cooling molten metal charged into a mold cavity of a mold including a core 11 for shaping a casting 10; moving the loaded mold to an explosion chamber 13 and removing the mold and core after casting the cast article, directing the mold and core an energized stream such as explosive charge (oxygen gas mixture) through the use of plug 30 and electric discharge unit 32 and dislodging at least a portion of the degraded mold and core from the casting.

5. Claims 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Heine et al.

Heine et al (col. 2, lines 1+) teach the claimed casting removing method, comprising: cooling molten metal charged into a mold cavity of a mold 8 including a core 20 for shaping a casting 10; moving the loaded mold to a tub or tank 2 and removing the mold and core after casting the cast article, stimulating the mold and core an energy pulsation such as shock wave through the use of reflector 24 and pulse generator 26 and dislodging at least a portion of the degraded mold and core from the casting.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1725

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2-3, 14-15 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of JP 55077972.

Either JP '952, Vinton et al or Heine et al fail to teach the use of scoring.

However, JP '972 (see abstract) teaches the use of scoring the mold surface for the purpose of weakening the mold and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al the use of scoring as taught by JP '972 in order to reduce cycling time of removing casting from the sand mold.

9. Claims 4-7, 17-19, 29-31 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Pennock et al.

Either JP '952, Vinton et al or Heine et al fail to teach the use of thermally heating the casting.

However, Pennock et al (col. 2, lines 68+) teach the use of thermally heating the casting (coating 25) with heating means including electrical induction heating means (col. 4, lines 73+)

Art Unit: 1725

for the purpose of promoting uniform casting and differential expansion between the casting and mold and weakening the mold and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al the use of thermally heating the casting as taught by Pennock et al in order to reduce cycling time of removing casting from the sand mold.

10. Claims 8, 20, 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Andrews.

Either JP '952, Vinton et al or Heine et al fail to teach the use of a degradable binder and sand.

However, Andrews (col. 3, lines 60+) teaches the use of a degradable binder and sand treated with oxidant impregnating liquid for the purpose of promoting collapsibility characteristics of foundry core and mold and weakening the mold after casting and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al the use of a degradable binder and sand as taught by Andrew in order to reduce cycling time of removing casting from the sand mold.

11. Claims 9, 16, 28 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Schlegel et al.

Either JP '952, Vinton et al or Heine et al fail to teach the use of heat treating the casting after the mold and core removal.

However, Schlegel et al (col. 3, lines 30+) teach the use of heat treating the casting after the mold and core removal for the purpose of promoting mechanic property such as casting

Art Unit: 1725

hardness (col. 7, lines 38+). It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al the use of heat treating the casting after the mold and core removal as taught by Schlegel et al in order to improve mechanic property such as casting hardness.

12. Claims 21-22 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Vinton et al or Heine et al in view of JP 09182952.

Either Vinton et al or Heine et al fail to teach the use of pressurized fluid.

However, JP '952 (see abstract) teaches the use of pressurized fluid and directing the mold and core an energized stream such as a jetted high pressure water through the use of nozzle 9 and dislodging at least a portion of the degraded mold and core from the casting for the purpose of weakening the mold and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al the use of pressurized fluid as taught by JP '952 in order to reduce cycling time of removing casting from the sand mold.

13. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09182952 in view of Legge et al.

JP '952 fails to teach the use of partially solidifying the casting in the mold before directing and dislodging the mold with fluid media.

However, Legge et al (col. 4, lines 44+) teach the use of partially solidifying the casting in a mold for the purpose of generating a thin self supporting metal shell before transferring the

Art Unit: 1725

mold to have further processing without damaging or deforming the casting shape (col. 6, lines 10+). It would have been obvious to one having ordinary skill in the art to provide JP '952 the use of partially solidifying the casting in the mold as taught by Legge et al in order to form a thin self supporting metal shell before directing and dislodging the mold with fluid.

14. Claims 44-45 and 48 rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Legge et al.

Either JP '952, Vinton et al or Heine et al fails to teach the use of partially solidifying the casting in the mold before directing and dislodging the mold with energized stream.

However, Legge et al (col. 4, lines 44+) teach the use of partially solidifying the casting in a mold for the purpose of generating a thin self supporting metal shell before transferring the mold to have further processing without damaging or deforming the casting shape (col. 6, lines 10+). It would have been obvious to one having ordinary skill in the art to provide JP '952, Vinton et al or Heine et al the use of partially solidifying the casting in the mold as taught by Legge et al in order to form a thin self supporting metal shell before directing and dislodging the mold with fluid.

15. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Legge et al and further in view of either Smetan et al or JP 55077972.

Either JP '952, Vinton et al or Heine et al in view of Legge et al fail to teach the use of scoring.

Art Unit: 1725

However, Smetan et al (col. 2, lines 66+) teach the use of scoring a portion of the mold including the core for the purpose of weakening the mold and promoting the removal of casting from the mold. JP '972 (see abstract) teaches the use of scoring the mold surface for the purpose of weakening the mold and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al in view of Legge et al the use of scoring as taught by either Smetan et al or JP '972 in order to reduce cycling time of removing casting from the sand mold.

16. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 09182952, Vinton et al or Heine et al in view of Legge et al and further in view of either Smetan et al or Pennock et al.

Either JP '952, Vinton et al or Heine et al in view of Legge et al fail to teach the use of thermally heating the casting.

However, Smetan et al (col. 2, lines 66+) teach the use of thermally heating the casting a portion of the mold including the core for the purpose of weakening the mold and promoting the removal of casting from the mold Pennock et al (col. 2, lines 68+) teach the use of thermally heating the casting (coating 25) with heating means including electrical induction heating means (col. 4, lines 73+) for the purpose of promoting uniform casting and differential expansion between the casting and mold and weakening the mold and promoting the removal of casting from the mold. It would have been obvious to one having ordinary skill in the art to provide either JP '952, Vinton et al or Heine et al in view of Legge et al the use of thermally heating the casting as taught by either Smetan et al or Pennock et al in order to reduce cycling time of removing casting from the sand mold.

Art Unit: 1725

Response to Arguments

17. Applicant's arguments with respect to claims 1-48 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I.H.L.
I-H. Lin

4-5-06

KEVIN KERNS
PRIMARY EXAMINER

Kevin Kerns 4/28/06